CompTIA Server+ - Quiz Questions with Answers

1.0 Server Hardware Installation and Management

1.

What type of memory is used in the main server systems?

- **DRAM**
- SRAM
- CRAM
- VRAM

Correct answer: DRAM

Dynamic random access memory (DRAM) is a type of semiconductor memory that is used for the data or program code needed by a computer processor to function. DRAM is the type of random access memory (RAM) that is used in PCs, workstations, and servers.

2.

You have purchased 42U-sized server racks. Not all the racks are filled yet. You would like to cover the empty spaces and also ensure that the vents are not blocked. What component can you use to meet these requirements?

Rack filler

Rail screen

Tower filler

Blank blade

Correct answer: Rack filler

Rack fillers serve multiple important purposes:

- *Reduce access for dust and contaminants*
- *Add stability to the rack*
- *Redirect hot exhaust air away from equipment*
- *Help to optimize the flow of cool air*

3.

Which chipset in the CPU architecture handles USB and PCI expansion card slots?

Southbridge

Northbridge

Westbridge

Eastbridge

Correct answer: Southbridge

The Southbridge connects to lower-speed peripheral buses such as PCI and USB. The Southbridge is slower than the Northbridge, and information from the CPU has to go through the Northbridge before reaching the Southbridge.

4.

Which chipset in the CPU architecture includes RAM (system memory)?

Northbridge

Southbridge

Westbridge

Eastbridge

Correct: Northbridge

The Northbridge is one of the two chips in the core chipset architecture on a motherboard. The Northbridge is connected directly to the CPU via the front-side bus (FSB), and it is responsible for tasks that require the highest performance.

5.

What type of memory chips can detect and fix memory corruption?

- **ECC**
- DRAM
- SRAM
- AMDM

Correct answer: ECC

Error correction code (ECC) memory is a type of RAM memory found in workstations and servers. It is built to automatically detect and correct memory errors, which prevents data corruption.

6.

You have several servers installed in a rack and would like to organize and consolidate the cables from those servers together at the back of the rack. What component can you use to meet this requirement?

Cable management arm

Cable tray

Cable conduit

Cable run

Correct answer: Cable management arm

A cable management arm is a component that is attached to the back of a rack-mounted device. Cables from the devices are fitted into the arm and can be labeled to maintain data center organization and facilitate troubleshooting.

7.

What type of hardware bus is used to connect peripheral devices such as video, storage, and network cards?

PCI

SATA

NAS

NIC

Correct answer: PCI

Peripheral Component Interconnect (PCI) is the most common way to attach add-on controller cards and other devices to a motherboard. Common types of PCI cards are network cards, sound cards, modems, and extra ports, such as Universal Serial Bus (USB).

The Serial Advanced Technology Attachment (SATA) interface is used to connect hard drives to a computer. Network attached storage (NAS) provides access to storage space over the network. The network interface card (NIC) allows a server to be connected to a switch.

8.

When planning to install several server devices in a rack, where should the associated power supplies be installed?

In the same rack

In a separate rack

On the data center floor

Under the data center floor

Correct answer: In the same rack

Power supplies and other auxiliary components should be installed in the same rack as the server. This will prevent safety or fire hazards and will also facilitate troubleshooting.

9.

Mobile and consumer devices have less power, heating, and cooling capabilities. What type of instruction set processors do they tend to use?

- **RISC**
- CISC
- ISAC
- AMDC

Correct answer: RISC

Reduced instruction set computing (RISC) is used by microprocessor architectures that need a small, highly-optimized set of instructions rather than a more specialized set of instructions.

10.

What storage architecture and implementation are used to connect network storage to servers using highly performant storage protocols such as Fiber Channel?

SAN

NFP

NAS

iSCSI

Correct answer: SAN

Storage area network (SAN) is a dedicated network for data storage. It provides access to consolidated, block-level data storage. SANs are primarily used to access high-end data storage devices, such as disk arrays and tape libraries from servers, so that the devices appear to the operating system as direct-attached storage.

11.

You are a storage administrator and need to establish a policy that determines which type of data will be stored on which specific storage media. What is this policy called?

HSM

HDD

SSD

DSM

Correct answer: HSM

Hierarchical storage management (HSM) is a policy that sets the organizational standard for storage device usage from fastest and most expensive to slower, more economical tiers. The intent is to ensure that the organization is optimizing its storage budget and delivering against its service levels.

12.

You are doing a data center hardware refresh and will be replacing rack-mounted servers with blade servers. As you evaluate different manufacturers, what feature should you look for that provides fault tolerance and high availability?

Redundancy

Customer support

Durability

Extended warranty

Correct answer: Redundancy

Many blade server manufacturers provide backplane and midplane redundant components. This reduces potential single points of failure and increases the overall availability of devices.

13.

What is the term for program code stored in a chip?

Firmware

Hardware

Software

Vaporware

Correct answer: Firmware

Firmware is a software program or set of instructions programmed on a hardware device. It provides the necessary instructions for how the device's software communicates with the other computer hardware components.

Vaporware is software that doesn't actually exist

14.

What type of processors and associated instruction set are found in mobile devices?

RISC

CISC

MISC

WISC

Correct answer: RISC

Reduced instruction set computing (RISC) is a type of microprocessor architecture that utilizes a small, highly-optimized set of instructions rather than a more specialized set of instructions often found in other types of architectures.

15.

Which of the following is a solution designed to improve the reliability of storage disks?

RAID

DAS

SAN

SSD

Correct answer: RAID

Redundant array of independent disks (RAID) is a way of storing the same data in different places on multiple hard disk drives to improve performance and to protect data in the case of a drive failure.

Direct-attached storage (DAS) is when disks are physically located in a server, while storage area networks (SAN) provide access to storage over the network. A solid-state drive (SSD) is a faster, quieter, and less power-hungry form of storage drive.

16.

Which storage speed factor refers to how fast a disk spins?

RPM

IOPS

RPS

IOPM

Correct answer: RPM

Revolutions per minute (RPM) is a measurement of how many revolutions a computer's hard drive makes in a single minute. The higher the RPM, the faster the data will be accessed for both read and write operations.

Input/output operations per second (IOPS) measures the speed at which data can be read or written to disk.

RPS and IOPM are fabricated terms.

17.

Your organization's workload is increasing, and you need to add capacity. The architecture for all the applications is a three-tier client/server. What is the term for adding additional systems to manage the workload?

Scaling out

Scaling up

Scaling down

Scaling in

Correct answer: Scaling out

"Scaling out" means adding more new servers to the configuration where capacity is needed. For example, if additional capacity is only needed for the database operations, more database servers could be added to the environment. The other servers in the architecture do not need to be affected.

"Scaling up" is the practice of adding additional horsepower to an existing server.

18.

What feature of the unified extensible firmware interface (UEFI) can prevent the injection of malware into the environment before the OS starts up?

Secure Boot

Firmware Security

Code Signing

Embedded Security

Correct answer: Secure Boot

Secure Boot establishes a trust relationship between the UEFI BIOS and the software it eventually launches, such as operating systems, drivers, and utilities. After Secure Boot is enabled and configured, only software or firmware signed with approved keys is allowed to execute.

19.

What tool is provided by a server manufacturer to help you determine if your firmware version is current after you download it but before installing it?

MD5 hash value

Multifactor authentication

Key value store

Auto download

Correct answer: MD5 hash value

MD5 values were originally used to compare the contents of a sent file to the received file to ensure data integrity. MD5 hash techniques are also used to compare one code base to another. In this scenario, the MD5 hash value would be used to determine if the blade server firmware was the most current version.

20.

What is the minimum number of integrated network interface cards (NICs) physical servers have?

Two

One

Four

Three

Correct answer: Two

Servers in a data center are connected to a network router. Routers always have dual paths configured, so by default, two network interface cards are required. More powerful servers running multiple workloads or hosting multiple virtual machines can have four or more NICs.

21.

What type of server has an undefined form factor?

Virtual

Blade

Tower

Rack-mounted

Correct answer: Virtual

A virtual server is a simulated server environment built on an actual physical server, running as a guest using hypervisor software. The underlying physical server has a form factor, but not the virtual server.

22.

What component do expansion cards need to move data in and out of the card?

Bus

DRAM

Slot

SRAM

Correct answer: Bus

A bus is a high-speed internal connection. Buses are used to send control signals and data between the processor and other components.

23.

One of the disks in a RAID group configuration failed, and it was replaced with an active hot spare while the system was still operational. What was that process called?

Hot swapping

Live replacement

Live swapping

Hot failover

Correct answer: Hot swapping

Hot swapping is the replacement or addition of components to a computer system without stopping, shutting down, or rebooting the system.

24.

You are upgrading CPUs and RAM on several servers in the data center.

What component's form factor should you compare and match up to the server chassis form factor to ensure stable operations after the upgrades are implemented?

PSU

PCI

USB

KVM

Correct answer: PSU

Power supply units (PSUs) provide the required wattage to all components inside a server simultaneously. The PSU form factor is calculated by multiplying the total amps of all components by the total volts of all components. The result is the total watts or PSU form factor required.

25.

What type of port is used for human interface devices?

USB

SCSI

SATA

PXE

Correct answer: USB

USB is the most common type of computer port used with computers. It is used to connect human interface devices, such as keyboards, mice, and game controllers, as well as printers, scanners, digital cameras, and removable media drives.

26.

You are concerned about possible data corruption if the servers in the data center experience an outage. What device should you use to ensure that devices shut down gracefully in the event of a power outage?

UPS

PSU

KVM

Surge protector

Correct answer: UPS

An uninterruptible power supply (UPS) is a battery-powered power supply that provides emergency power to a data center when the input power source or main power fails. UPSs are standard in data centers.

The power supply unit (PSU) provides power to a server, and a surge protector prevents power surges from frying a device. A KVM enables the same keyboard, display, and mouse to be used by multiple computers.

27.

Within a data center, many types of devices use installed power distribution units (PDUs). What metric should you monitor and track utilization against to ensure that the equipment is not stressing the PDU rating?

Load capacity

Circuit capacity

Server utilization

Rack density

Correct answer: Load capacity

Power distribution units are designed to support a specific number of amps or amount of electrical currents. The maximum amount is called load capacity. Building and operations codes mandate that the PDU published load capacity cannot be exceeded.

28.

Your organization's workload is increasing, and you need to add capacity. The architecture for all the applications is single server and monolithic. What is your technology option for adding more horsepower to the applications?

Scaling up

Scaling out

Scaling across

Scaling down

Correct answer: Scaling up

Scaling up means making a component larger or faster to handle a greater load. In this scenario, all the application code is running on a single server. Therefore, the only way to increase capacity is to make the components of the server more powerful.

29.

What is the term for the small amount of memory on a server motherboard that stores the basic input/output system (BIOS) settings?

CMOS

MBR

UEFI

GPT

Correct answer: CMOS

CMOS is an onboard, battery powered semiconductor memory chip inside servers that stores information about the server hardware configuration. This information ranges from the system time and date to system hardware settings for the server.

MBR and GUID Partition Table (GPT) are two initialization options for disks. The unified extensible firmware interface (UEFI) is the modern version of the BIOS.

30.

Tower servers are widely used because of the following: small computing environments as they have low entry-level pricing, all components housed within a single cabinet, and room for expansion.

What is a disadvantage of tower servers?

They do not have redundant power supplies.

They cannot connect to a network.

They do not have built-in storage capacity.

Their pricing is very expensive.

Correct answer: They do not have redundant power supplies.

Tower computers do not have redundant power supplies because they are intended to cloud into regular power grids in a small office environment and manage a small number of users. They are not fault-tolerant servers.

31.

What is the name of the firmware that is launched and executed when a server is powered on?

BIOS

MBR

GPT

CMOS

Correct answer: BIOS

Basic input/output system (BIOS) is firmware used to perform hardware initialization during the booting process. It is embedded on a server's chip. After it is launched, it manages data flow between the computer's operating system (OS) and attached devices, such as the hard disk, video adapter, keyboard, mouse, and printer.

The MBR and GUID Partition Table (GPT) are different initialization options for a disk. The complementary metal oxide semiconductor (CMOS) holds configuration settings for the BIOS.

32.

Which of the following is MOST related to the movement of data between various components within a server?

PCI

NIC

DAS

DDR

Correct answer: PCI

A bus is a connection between components or devices inside a server and connected to a server. For example, a bus carries data between a CPU and the system memory via the motherboard. PCI is the original standard for buses and was superseded by PCI-X and PCIe.

A network interface card (NIC) allows a server to be connected to a switch. Direct attached storage (DAS) is data storage located within a server. Double data rate (DDR) reads and writes twice as quickly as single data rate (SDR) memory.

33.

What category of transmission technology is the fastest and allows users to plug in a wide variety of devices?

Serial

Parallel

Multiplexed

Duplexed

Correct answer: Serial

Serial transmission allows devices to leverage high frequencies, which results in a higher net transfer rate. Serial transmission also does not require extensive line checking and stabilization, which enables the fastest type of transmission. USB stands for universal serial bus.

34.

Which server form factor has a built-in circuit board containing processors, memory, network capabilities, and storage?

Blade

Tower

Rack

PDU

Correct answer: Blade

A blade is a modular server that is physically thin and has CPUs, memory, integrated network controllers, and storage drives built in. Most blade servers are dedicated, meaning they are focused on a single-use application.

35.

What component of a blade enclosure is a printed circuit board with server blades on one side connected to other components such as networking interfaces on the other side?

Midplane

Frontplane

Backplane

Hybrid plane

Correct answer: Midplane

Midplanes are often used in blade servers, where the server blades reside on one side and the peripheral components such as power, networking, and other I/O reside on the other. Midplanes are also used in networking and telecommunications equipment, where one side of the blade connects system processing components and the other side of the blade connects network interface cards.

36.

What storage speed factor refers to how often a disk can perform input/output operations?

IOPS

IOPM

IOPH

IOPO

Correct answer: IOPS

Input/output operations per second (IOPS) is used to measure the performance of a storage device. IOPS indicates how many input or output operations a device can perform in one second.

Input/output operations per minute, hour, and operation (IOPM, IOPH, and IOPO) are fabricated terms.

37.

What UNIX protocol is used to implement network attached storage?

NFS

SAN

HDD

SSD

Correct answer: NFS

A network file system (NFS) is a distributed file system protocol developed by Sun Microsystems that allows users to view, store, update, or share files on a remote computer as though it was a local computer.

38.

What type of server increases the potential for density in a server room or data center?

- **Rack-mounted**
- Blade-centered
- Tower
- Standalone

Correct answer: Rack-mounted

A rack-mounted server is a computer designed to be installed in a frame called a rack. The rack contains multiple mounting slots called bays, and each bay holds a hardware unit secured in place with screws. Rack-mounted servers are smaller and more space-efficient than standalone or tower servers.

Blade-centered is a fabricated term that seems like what blade servers might be called.

39.

Racks use a standard increment to express the height of a piece of computer or networking equipment installed in the rack. This is abbreviated as “U.”

What is the height in inches of a 4U rack-mounted device?

Seven

Six

Eight

Four

Correct answer: Seven

The standard U increment used to express the height of a piece of computer or networking equipment installed in a rack is equal to 1.75 inches. 4U equals seven inches.

40.

What device built into a server motherboard ensures that the server CPU only gets the voltage at the level it needs for normal operations?

VRM

HDI

KVM

VDH

Correct answer: VRM

CPUs use voltage regulator modules (VRMs) to control and lower the voltage to avoid exceeding their maximum voltage capabilities. VRMs ensure that the power supplied to components is consistent and steady.

41.

You are worried about losing data that has not yet been written to the physical disk if a disk array stopped and started, and the power cycled off.

What feature can you use for this scenario?

Battery backed write caching

Redundant write caching

Redundant array of disks

Backup write caching

Correct answer: Battery backed write caching

Battery backed write caching is a technology feature used in disk storage to improve performance and data integrity. It uses batteries to continue providing power to the volatile memory after the device has lost power. This protects data not yet written to a physical disk.

42.

Storage area networks house data that is typically used in business-critical workloads. What type of disk interface is used to achieve the required level of performance?

FC

SAS

SCSI

SATA

Correct answer: FC

A fibre channel (FC) is a data transfer protocol providing high-speed delivery of block data to applications. Fibre channels are used to connect storage to servers in storage area networks, which are found in commercial data centers.

Serial-attached SCSI (SAS), Small Computer System Interface (SCSI), and Serial ATA (SATA) are other disk interface standards.

43.

What storage speed factor refers to the time it takes for a hard disk controller to locate a specific piece of stored data?

Seek time

Seek latency

Seek revolutions

Seek rate

Correct answer: Seek time

When anything is read or written to a disk drive, the read/write head of the disk needs to move to the right position. The amount of time that it takes the read/write head of the disk to move from one part of the disk to another is called "seek time."

44.

What is the name of disk drives that are plugged in and ready to take over if a current operational disk in a RAID group fails?

Hot spare disk

Active disk

Standby disk

Failover disk

Correct answer: Hot spare disk

Hot spare disks are preparatory disk drives that are kept on active standby for use when a disk drive fails. If a disk drive in a RAID group fails, data on the disk drive is rebuilt automatically on the hot spare disk in the background.

45.

Before adding network interface cards to a physical server, which of the following do you need to check first for compatibility?

PCI expansion slot

Bus

CPU

BIOS version

Correct answer: PCI expansion slot

Network interface cards (NICs) fit into PCI slots. There are several generations of NICs, and they have different processing speeds that are compatible with specific devices.

46.

Your data center has limited HVAC capability. What type of storage technology requires the least amount of power draw to run cooler?

SSD

HDD

SFF

LFF

Correct answer: SSD

Solid state drives (SSDs) use less power because they don't have any mechanical moving parts such as motors. Therefore, they generate less heat and require less HVAC than other storage technologies.

47.

You have implemented an Ethernet network and need high speed storage transmission between the servers and storage. Your data center has been wired with standard twisted-pair copper cables.

What transmission method is appropriate for this requirement?

FCoE

SATA

iSCSI

NFS

Correct answer: FCoE

Fibre Channel over Ethernet (FCoE) is a transmission technology that transmits Fibre Channel frames over Ethernet networks. This allows Fibre Channel to use the existing Ethernet networks while preserving the Fibre Channel protocol.

48.

Which of the following is NOT a tool for protecting a server from overheating?

PSU

Liquid cooling

Heat sink

Blanking panel

Correct answer: PSU

A heat sink is a passive heat exchanger that transfers the heat generated by an electronic device to an air or a liquid coolant, where it is dissipated. This allows the device's temperature to be regulated. Liquid cooling runs cool water through a server, where it heats up and carries that heat away. Blanking panels are empty spaces in a server designed to improve airflow and keep the server cool.

A power supply unit (PSU) supplies power to a server.

49.

What storage speed factor determines the amount of data that can be transferred from the hard disk?

Bus width

Bus rotations per second

Bus latency

Bus revolutions per second

Correct answer: Bus width

Bus width determines the amount of bits that can be transferred at the same time. It is important in older storage technologies because in newer technologies, disk transmission uses serial rather than parallel transmission.

50.

What special bit is used by error-correcting code memory to detect and fix memory errors?

Parity

Cache

CMOS

Hyper

Correct answer: Parity

A parity bit is also known as a check bit. It is a single bit that can be appended to a piece of data to check if an error occurred. For example, to check a binary sequence with even parity, the total number of ones can be counted. If the number of ones is not even, an error is likely to have occurred.

51.

You would like to purchase and install a server that has all components housed within a single case. What server form factor would be best?

Tower

Rack

Blade

Virtual

Correct answer: Tower

A tower server is a computer that is built in an upright cabinet. The cabinet houses all the server components within a single case and sits directly on the floor or on the desk.

52.

What type of memory requires electricity and electric current to operate and retain data?

Volatile

Non-volatile

Cache

Offline

Correct answer: Volatile

Volatile memory is computer memory that requires power to maintain the stored information. It retains its contents while powered on. Yet, when the power is interrupted, the stored data is quickly lost. Volatile memory has several uses, including the use as primary storage.

53.

The storage devices in your data center support business-critical workloads and require a high level of fault tolerance. What type of disk interface meets this requirement via support for hot swapping?

SAS

FC

SATA

SCSI

Correct answer: SAS

Serial attached SCSI (SAS) interfaces support hot swappable devices. This means that if there is a failure, a new replacement device can be installed without taking the entire disk configuration down, which is a fault tolerance feature.

54.

What type of memory increases data transfer rates to and from memory faster than traditional memory?

DDR

SDR

ECC

PCI

Correct answer: DDR

DDR stands for "double rate," which means the chip reads or writes two words of knowledge per clock cycle. DDR memory accomplishes this by reading and writing information on each of the rising and falling edges of the clock signal. Single data rate (SDR) memory can only read/write once per clock cycle.

Error correcting code (ECC) memory uses a parity bit to identify and correct errors in a group of memory bits. PCI is a standard for computer buses.

55.

Because data centers need to fit as many servers as possible within a fixed amount of space, what metric is used to optimize the space?

Density

Form factor

Miniaturization

Compression

Correct answer: Density

Density refers to the number of components on a physical board or blade. The higher the number of components, the more dense the server is. Increased densities allow for more computing power per square foot, smaller capital purchases, and lower energy bills.

56.

You would like to increase security in the data center by installing servers that can be locked on both sides. What type of server meets this requirement?

Rack-mounted

Blade-mounted

Cabinet-mounted

Tower-mounted

Correct answer: Rack-mounted

Rack-mounted servers are installed in frameworks that can be physically locked in the front and back, which increases the physical security of the devices.

57.

What type of storage is directly attached to a server?

Direct-attached storage

Network-attached storage

Server attached storage

Device dependent storage

Correct answer: Direct-attached storage

Direct-attached storage (DAS) is digital storage directly attached to the computer accessing it as opposed to storage accessed over a computer network. Examples of DAS include hard drives, solid-state drives, optical disc drives, and storage on external drives.

58.

What type of compliance issue can be caused by increasing the number of vCPUs?

Licensing

Performance

Security

Governance

Correct answer: Licensing

Many vendors license their server-based products based on the number of physical processors. It is important to have the correct licensing agreements in place before increasing the vCPU footprint.

59.

You are setting up a small office network and need to install a server on the premise for up to 10 users. In the future, you will need to add storage to the server, so you need a server type that has available physical space.

What is the best form factor for this requirement?

Tower

Rack

Blade

SaaS

Correct answer: Tower

Tower servers are often used in small office environments. They have a low entry level price point, and because the components are housed in the cabinet, there is space available to add additional components as capacity requirements increase.

60.

You are getting system errors from several of your blade servers. What is an appropriate first step to take when troubleshooting this scenario?

Apply firmware updates from the manufacturer

Run several reboots

Convert the operating system

Discontinue the blade server version

Correct answer: Apply firmware updates from the manufacturer

Hardware problems can sometimes create software issues. For example, flawed or out-of-date firmware can create operating system errors. Hardware manufacturers are constantly monitoring for reported errors and updating their firmware. Therefore, the first thing to do in this scenario would be to ensure that you are on the most current version of firmware.

61.

Where is cold air pumped in from to the racks to keep the data center components cool?

- **Floor**
- Ceiling
- Coils
- Walls

Correct answer: Floor

The cooling strategy for a data center is to send cool air from the floor up to the rack components. Arranging the racks in rows facilitates the creation of hot and cold aisles.

62.

What type of processing refers to the scenario where multiple identical physical CPUs are working together in parallel?

SMP

PMP

RISC

BIOS

Correct answer: SMP

Symmetric multiprocessing (SMP) involves the following:

- *Has a multiprocessor hardware and software architecture, where two or more identical processors are connected to a single, shared main memory*
- *Has full access to all input and output devices*
- *Is controlled by a single operating system instance that treats all processors equally, reserving none for special purposes*

Reduced Instruction Set Computing (RISC) processors use a simpler instruction set to improve efficiency. The BIOS is firmware on a computer.

PMP is a fabricated term.

63.

You have a large volume of data that needs to be archived. The data retrieval frequency may be frequent, but the data will not change.

What type of storage drive is well suited to meet this requirement?

WORM

ROWM

LIFO

FIFO

Correct answer: WORM

Write once read many (WORM) technology can archive data in a non-rewritable, non-erasable format. Using this technique, recorded data can no longer be overwritten, modified, and/or manipulated.

64.

You are examining the BIOS configuration in the setup utility and notice that the ECC chips are not paired and the non-ECC chips are not paired.

If not corrected, what impact will this have on processing?

Memory error collection is disabled

Memory error collection is enabled

Memory error collection slows down

Memory error collection is doubled

Correct answer: Memory error collection is disabled

Error correction codes (ECCs) use error correction bits to detect and correct data corruption, which occurs in memory. It is used in computers and databases where such corruption is unacceptable.

65.

There are four levels of CPU cache in the CPU architecture. Which level is the slowest and largest?

L4

L3

L2

L1

Correct answer: L4

L4 cache is accessed and used if L3 cache is found to have no hits. While L4 is not commonly used, performance studies have shown that because of its size, it improves the performance for enterprise-class workloads.

66.

Which component of a blade enclosure connects server and input/output blades?

- **Backplane**
- Frontplane
- Midplane
- Storage plane

Correct answer: Backplane

The blade enclosure backplane provides a PCI connection between a server blade and storage without requiring cables. This enables high performance storage access, which results in a good response time for the application.

67.

What equipment is used to insert a rack-mounted server into the physical rack for easy access by IT personnel?

Rails

Blades

Drawers

Enclosures

Correct answer: Rails

Metal rails are used to house the individual servers in the rack. They are typically sliding rails so that the authorized server administrators have easy access to the servers. The administrators can then perform maintenance or troubleshooting.

68.

Metal racks in data centers can be heavy and, as such, the data center construction must account for how much weight the floors can safely support.

What technique is used to prevent the racks from tipping over?

Bolting

Serverless

Distribution

Decentralizing

Correct answer: Bolting

Bolting servers to the floor is a best practice for data center implementations. In geographies that are prone to earthquakes or other environmental shifts, bolting is a compliance requirement.

69.

You need more server capacity but have limited physical space in your data center. What type of physical server takes the least amount of space?

Blade

Virtual

Tower

Rack-mounted

Correct answer: Blade

A blade server, sometimes referred to as a high-density server, is a compact device that consists of a thin electronic circuit board and memory.

70.

Your workload requires a high speed disk, but SSD technology is relatively expensive.

What is another storage option for your requirement that is at a lower price point but still delivers high performance?

- **Hybrid drive**
- Tier 2 SSD
- HDD
- NAS

Correct answer: Hybrid drive

A hybrid drive is a storage device that combines a faster storage medium such as a solid-state drive with a higher capacity hard disk drive. The intent is to combine the speed of SSDs with the cost-effective storage capacity of traditional HDDs.

71.

There are four levels of CPU cache. Which level is the fastest?

- **L1**
- L2
- L3
- L4

Correct answer: L1

L1 cache is the fastest memory in the computer and the closest to the processor. Typically, L1 cache is about 100 times faster than RAM because it uses static RAM.

72.

You need to purchase and configure five servers and send them, ready for operational use, to branch offices that serve your company. These branch offices are growing, and you will need to add capacity to the servers in approximately six months to one year.

What type of server is best suited for this requirement?

- **Tower**
- Blade
- Rack
- Virtual

Correct answer: Tower

Tower servers have all their components in a single cabinet. Many models are lightweight and easy to ship. Additionally, because the cabinets have space available, components such as storage or memory upgrades can be implemented in the future.

73.

What is the vertical distance between the holes in a rack referred to?

Rack unit

Rack height

Rack width

Rack dimension

Correct answer: Rack unit

A rack unit is a unit of measurement applied to equipment racks and servers and is measured as the distance between the holes in the rack to which the rails and other rack-mounted equipment are secured.

74.

What component of the CPU architecture speeds up the execution of anticipated instructions?

Cache

GPU

Hypervisor

BIOS

Correct answer: Cache

CPU cache is used by the central processing unit of a computer to reduce the average cost to access data from the main memory. A cache is a smaller, faster memory located closer to a processor core, which stores copies of the data from frequently used main memory locations.

A graphics processing unit (GPU) is a specialized processor designed to handle computationally complex tasks (like rendering graphics). A hypervisor is software that manages virtual machines (VMs). The system BIOS is firmware that performs the system boot process.

75.

You are selecting a new CPU architecture that will become the standard for your data center. You plan to run the VMware hypervisor. What feature must your CPU architecture support?

Hardware virtualization

Containerization

Software virtualization

Microservices

Correct answer: Hardware virtualization

Virtualization offers the ability to emulate hardware to run multiple operating systems (OS) on a single computer using hypervisor software. Hypervisors use many sophisticated operating system-level components to run virtual machines, and the selected CPU architecture must support those operating systems.

76.

What term is used to describe the variety of shapes and sizes that physical servers come in?

Form factor

Dimension

Enclosure

Footprint

Correct answer: Form factor

Form factor is a hardware design aspect that defines and prescribes the size, shape, and other physical specifications of computing components. It is often used to describe the size of circuit boards, especially the motherboard and expansion cards.

77.

Your data center supports multiple tenants, and you wish to provide a high level of physical access control. What type of physical server meets this requirement?

Rack-mounted

Towers

Virtual

Blade

Correct answer: Rack-mounted

Rack-mounted servers are installed in frameworks that can be physically locked in the front and back. This increases the physical security of the devices and meets the requirements of security-conscious tenants.

78.

Your organization's requirements for storage capacity is growing and needs to scale. You have mostly tower form factor servers in your data center. Converting to blade servers is an option for scalability.

What is a less costly option you should evaluate first?

Tower server expansion card

Rack-mounted server

Entry-level blades

New high density tower servers

Correct answer: Tower server expansion card

Tower servers are a less expensive factor in general. Tower servers have cost-effective storage expansion cards that could be a viable interim solution for the organization's storage capacity needs without having to rush into converting to blade servers right away.

79.

What metric can you use to calculate the HVAC requirements for your data center?

- **BTU**
- PSU
- KVM
- HDI

Correct answer: BTU

Heat, which is energy emitted from data center devices, is measured in British thermal units (BTUs). Heat output is expressed as BTU per hour. Data center managers use this metric to calculate HVAC requirements to accommodate the heat generated in the data center.

80.

You wish to eliminate any single point of failure of power going to the racks in your data center. What is the MOST efficient way to address this requirement?

Utilize redundant power distribution units

Ensure that some racks are connected directly to wall outlets

Connect all servers to a surge protector

Utilize multiple utility company grids

Correct answer: Utilize redundant power distribution units

A power distribution unit (PDU) is a device fitted with multiple outputs designed to distribute power to racks of computers and networking equipment located within a data center. By connecting each rack to multiple PDUs, you can ensure that operations will not be disrupted if there is an outage with one of the PDUs.

81.

Public cloud storage has become popular due to low cost and elasticity. What restriction would prohibit an organization from moving all their data to cloud storage?

Regulatory

Cost

Scalability

Provisioning

Correct answer: Regulatory

Many organizations and countries have data protection, privacy, and sovereignty requirements that prohibit storing data in the public cloud. Examples are governments, financial institutions, and healthcare organizations.

82.

A storage area network topology typically consists of multiple HBAs, fiber channel switches, and storage devices. What is this topology called?

Fabric

Architecture

Blueprint

Configuration

Correct answer: Fabric

A storage area network (SAN) is configured into a number of zones. Devices in the SAN can communicate with devices that are included in the same zone. The collection of zones that are connected by routers and switches is called the SAN fabric.

83.

You need to add expansion slots to your server, but you need faster transfer speeds than the 64-bit expansion cards presently installed.

What generation of PCI cards can give you up to four times the PCI transfer speed?

PCI-X

PCI-64

PCI-32

PCI-2000

Correct answer: PCI-X

PCI-X (Peripheral Component Interconnect eXtended) is an expansion card standard that provides higher bandwidth demanded by servers. A PCI-X card can be installed in a PCI slot, provided it has the correct voltage.

84.

What is the term for a rush of electrons between differently charged objects that can damage sensitive electronic components?

ESD

Surge

PSU

Current

Correct answer: ESD

Electrostatic discharge (ESD) is the transfer of electrons from one object to another. Large static voltages can enter devices and cause damage to the intricate internal circuitry.

85.

You need a low-cost interface solution to enable the storage devices on your departmental TCP/IP network to be available to servers on that network.

What protocol best meets this requirement?

iSCSI

aSCSI

FC

SATA

Correct answer: iSCSI

An internet small computer system interface (iSCSI) leverages the Transport Control Protocol and allows the SCSI command to be sent end-to-end over local-area networks, which are generally implemented for departmental networks. iSCSI makes it possible to set up a shared-storage network where multiple servers can access central storage resources as if the storage was a locally connected device.

86.

Your data center has a pool of servers, which you need to connect to a single set of peripherals (keyboard, display, and mouse) via a USB port. What type of device should you use for this requirement?

KVM switch

USB hub

HyperUSB

USB switch

Correct answer: KVM switch

A keyboard, video, and mouse (KVM) switch is a device that allows users to quickly and easily switch between multiple servers from a single console to increase operational efficiency, management, and cost and space savings.

A USB hub could allow multiple peripherals to be connected to a single computer. The other two options are fabricated terms.

87.

Your organization has standardized rack-mounted servers, but its requirements for computing capacity is growing at an exponential rate.

What server form factor is the best option to replace your rack-mounted servers to increase data center density?

- **Blade server**
- Tower
- Ultra rack server
- Server distribution unit

Correct answer: Blade server

Blade servers are ultra-thin servers that have CPU, memory, network connections, and storage included on the device. To scale capacity in a data center that presently has rack servers, blade servers are the appropriate choice.

88.

What type of server is commonly used by users who are gamers?

Tower

Blade

Virtual

Rack

Correct answer: Tower

A tower server is a computer that is built in an upright cabinet that stands alone. This type of computer can be easily moved without removing screws or sliding it out of the rack.

89.

What component is required for servers to connect to a storage area network?

HBA

LUN

SAS

HDD

Correct answer: HBA

A host bus adapter (HBA) allows devices in a Fibre Channel storage area network to communicate data with each other. HBAs connect servers to storage switches and storage devices and connect multiple storage systems together.

A LUN is a logical unit number. Serial attached SCSI (SAS) is another type of disk interface. HDD stands for hard disk drive.

90.

What is the symbol or abbreviation for the unit of measurement used for rack-mounted devices?

U

R

I

C

Correct answer: U

"U" is the standard unit of measurement for rack-mounted equipment and is equivalent to 1.75 in. Racks can be used to house servers, hard drives, switches, routers, and other computers.

2.0 Server Administration

91.

Most switches work directly with MAC addresses. Using the OSI model reference, at what layer do those switches operate?

- **Data link**
- Transport
- Session
- Physical

Correct answer: Data link

The data link layer establishes and terminates a connection between two physically connected nodes on a network. It breaks up packets into frames and sends them from source to destination. This layer is composed of two parts:

- ***Logical Link Control (LLC)**, which identifies network protocols, performs error checking, and synchronizes frames*
- ***Media Access Control (MAC)**, which uses MAC addresses to connect devices and define permissions to transmit and receive data*

92.

What protocol is used by Windows servers to make shared folders available to users over the network?

SMB

NGINX

CUPS

HTTP

Correct answer: SMB

The Server Message Block (SMB) protocol is a network file sharing protocol that allows applications on a computer to read and write to files. SMB is also used to request services from server programs in a computer network.

93.

If a DHCP client cannot reach a DHCP server, how can they configure the connection?

APIPA

Real-time DHCP

FQDN

DNS

Correct answer: APIPA

Automatic Private IP Addressing (AIPIA) is a feature in operating systems that enables computers to self-configure an IP address and subnet mask automatically when their DHCP server isn't reachable. If APIPA detects a DHCP server on the network configuration area, it stops and lets the DHCP server replace the dynamically allocated addresses.

94.

You are examining the hierarchy in a DNS server. You see domains, such as .com, .org, .net, and .edu. Where in the DNS hierarchy are you?

- **Root domain**
- Top level domain
- Master domain
- Translation domain

Correct answer: Root domain

The DNS tree has a single domain at the top of the structure called the root domain. The root name servers are the first step in translating (resolving) human readable host names into IP addresses that are used in communication between internet hosts.

95.

Servers are deployed in an organization to offer services that provide business value. What type of server provides a name to IP address look up?

DNS

DHCP

NTP

VPN

Correct answer: DNS

DNS servers provide a directory service to transform domain names into numeric IP addresses. When users type domain names into the URL bar in their browser, DNS servers are responsible for translating those domain names to numeric IP addresses, leading them to the correct website.

A DHCP server provides temporary IP addresses to a computer. An NTP server helps to synchronize network time within a network. A VPN server terminates VPN connections for secure connectivity to a corporate network.

96.

What type of copper cable has the same pin positions on both ends and is used to connect two devices of different types, such as patch panel connections to switch ports and network infrastructure equipment to switches?

Straight-through

Crossover

Rollover

Shielded

Correct answer: Straight-through

Straight-through refers to cables that have the pin assignments on each end of the cable. They are used to connect computers, printers, and other network client devices to the router switch or hub.

97.

Which layer of the OSI model is responsible for defining the means of transmitting raw bits over a physical data link connecting network nodes?

Physical

Device

Network

Session

Correct answer: Physical

The physical layer is responsible for the physical cable or wireless connection between network nodes. It defines the connector, the electrical cable or wireless technology connecting the devices, and is responsible for transmission of the raw data.

98.

Which type of transmission media carries multiple signals over different channels via the same medium?

Fiber optic

Shielded copper

Unshielded copper

Cladding

Correct answer: Fiber optic

Wavelength-division multiplexing (WDM) is the technique of transmitting multiple channels of information through a single optical fiber by sending multiple light beams of different wavelengths through the fiber.

99.

How is Microsoft Active Directory synchronized between distributed domain controllers in the network?

Replication

Decentralization

Federation

Failover

Correct answer: Replication

Microsoft Active Directory databases are copied (replicated) between domain controllers in the network. A domain controller is a server that holds a replica of the active directory database.

100.

You are configuring remote network connectivity for the LAN to send traffic to the internet. Your users need high availability in your configuration. What DHCP scope configuration setup is appropriate for this scenario?

Two or more default gateways

Two or more DHCP reservations

One or more address inclusions

Four or more address ranges

Correct answer: Two or more default gateways

Default gateways enable traffic to be sent outside of a LAN. By specifying at least two default gateways for remote network connectivity (if one router becomes unavailable), the others can pick up the workload.